

# SMALL PUMPING STATIONS



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100% reusable PE material



Resistant to Nordic climate



Safe to maintain



Resistant to mechanical damage



The PE material's guaranteed lifetime is 50 years



Dear customer!

Welcome to our pumping stations catalogue!

Here you will find information on the characteristics of the pumping stations, instructions for installation, and suggestions for maintenance.

Long-term durability, ease of installation, and safe operation are our main priorities when developing pumping stations.

STRONG small pumping stations are for pumping waste water, storm water, and drainage water in places where installing gravity-flow piping is not possible or reasonable. From us, even the most demanding customers will find suitable pumping stations, pumps, and control cabinets.

Aside from STRONG small pumping stations we also offer large pumping stations, booster pumping stations, tanks, septic tanks, etc. of the same brand.

Detailed information about all our products is available at the address [www.iwsgroup.ee/en](http://www.iwsgroup.ee/en).



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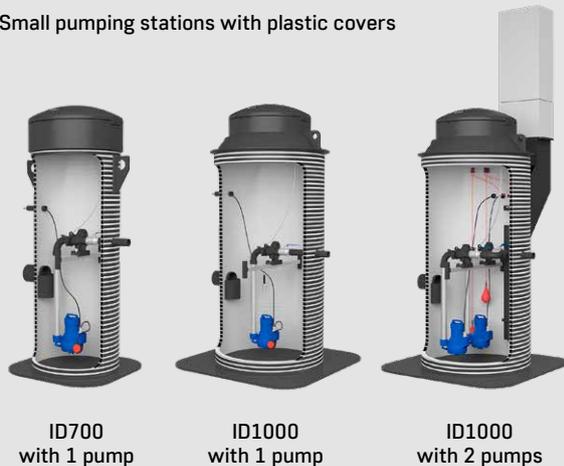
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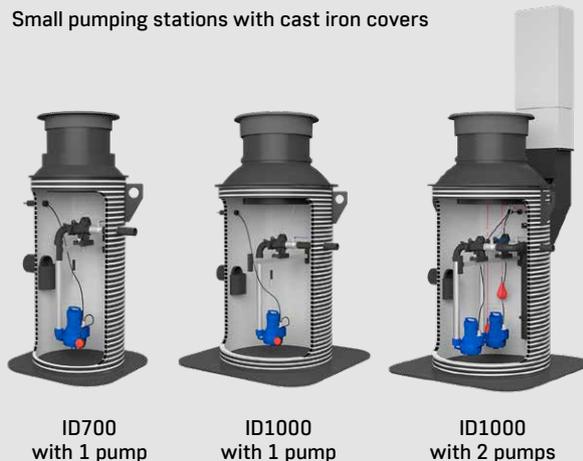
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# PRODUCT RANGE

Small pumping stations with plastic covers



Small pumping stations with cast iron covers



## AREA OF USE AND PRODUCT RANGE

STRONG small pumping stations are for pumping waste water, storm water, and drainage water in places where installing gravity-flow piping is not possible or reasonable. Mainly for private houses or smaller house groups.

- Inside diameter of the pumping station: ID700, 1000 mm
- Pressure pipes: DN40, 50 mm
- Inlet pipe: D110, 160 mm
- Number of pumps: ID700 with 1 pump, ID1000 with 1 or 2 pumps
- Installation depth: up to 4 m
- Service opening: D700 mm plastic cover or DN600, 500 mm (40T) cast iron cover
- Pumps: up to DN50, according to customer's wishes

## OPERATING PRINCIPLE

STRONG small pumping stations are single-chamber pumping stations with submersible pumps. They are compact and consist of a collection tank, pumps and their lifting elements, pressure pipes, and a control cabinet.

As a rule, they house a single submersible pump. Submersible pumps with a level sensor or float switch can be used in pumping stations with a single pump. When the level of waste water reaches the maximum level, the float switch or level sensor will turn the pump on and will shut it off once the water level reaches the minimum level. Additionally, we recommend using the Tank-Check TC-412 alarm device that will transmit a wireless signal when the water level in the pumping station reaches the emergency high level. The control cabinet of the pumping station is designed according to the customer's needs.

The ID1000 small pumping station allows the use of two submersible pumps, so that the pumping station would remain operational even during maintenance or breakdown of one pump. The pumps work alternately, in extreme situations also simultaneously. The pumps are controlled by automatics installed in the control cabinet. Level sensor or float switches are used for setting the pumping station's water levels for starting and stopping the pumps. The control cabinet is designed and constructed according to customer's needs.

## INITIAL DATA FOR MANUFACTURING A PUMPING STATION

- inside diameter of the pumping station (ID, mm);
- pumping station's height from the ground (H1, mm);
- outflow pressure pipe height (H2, mm) and diameter (D1, mm);
- inlet pipe height (H3, mm) and diameter (D2, mm);
- type of water to be pumped (waste water, storm water, etc.);
- pump parameters – flow rate (Q, l/s) and head (H, mVs);
- number of pumps;
- a plastic cover for green areas / cast iron cover for traffic areas.

# TECHNICAL CHARACTERISTICS

STRONG pumping stations are made of PE-HD (high-density polyethylene). Nowadays, PE is a common material used for manufacturing pumping stations, tanks, wells and pressure pipes. PE is an elastic and durable type of plastic. Under normal conditions of use PE is a chemically inert plastic, which

means pumping stations manufactured using PE do not decompose, rust or corrode due to chemical or electrical reactions, and nothing is released or dissolved into the environment. The tank cylinder of the pumping station is always manufactured with a ring stiffness of at least SN2 (2 kN/m<sup>2</sup>), so

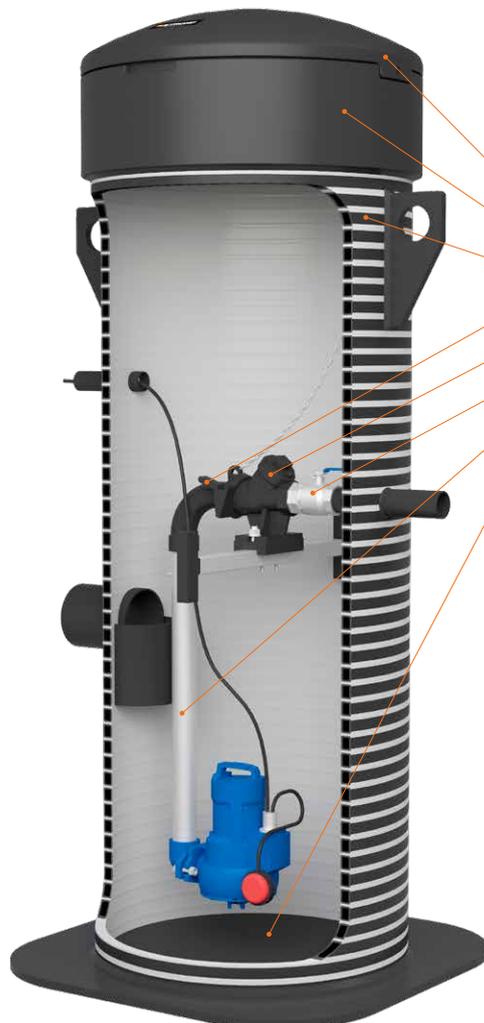
it is resistant to mechanical damage that may occur when installing or using the system. This is important for preventing waste water leakage into soil or groundwater from getting into the pumping station. Additionally, the tank cylinder is double-walled, making it absolutely leak-proof.

**Cover: PE, with 50 mm of thermal insulation**

**Service opening: PE, with 50 mm of thermal insulation**

**Tank cylinder: double-walled PE with ring stiffness SN2**

**Auto-coupling (GG25 with epoxy coating)**



1. **Cover** (PE, 50 mm of thermal insulation)
2. **Service opening** (PE with 50 mm of thermal insulation)
3. **Tank cylinder** (double-walled PE with ring stiffness SN2)
4. **Auto-coupling** (GG25 with epoxy coating)
5. **Non-return valve** (GG25 with epoxy coating & NBR ball)
6. **Ball valve** (GFPP)
7. **Pressure pipe** (A4)
8. **Bottom of the pumping station** (PE)

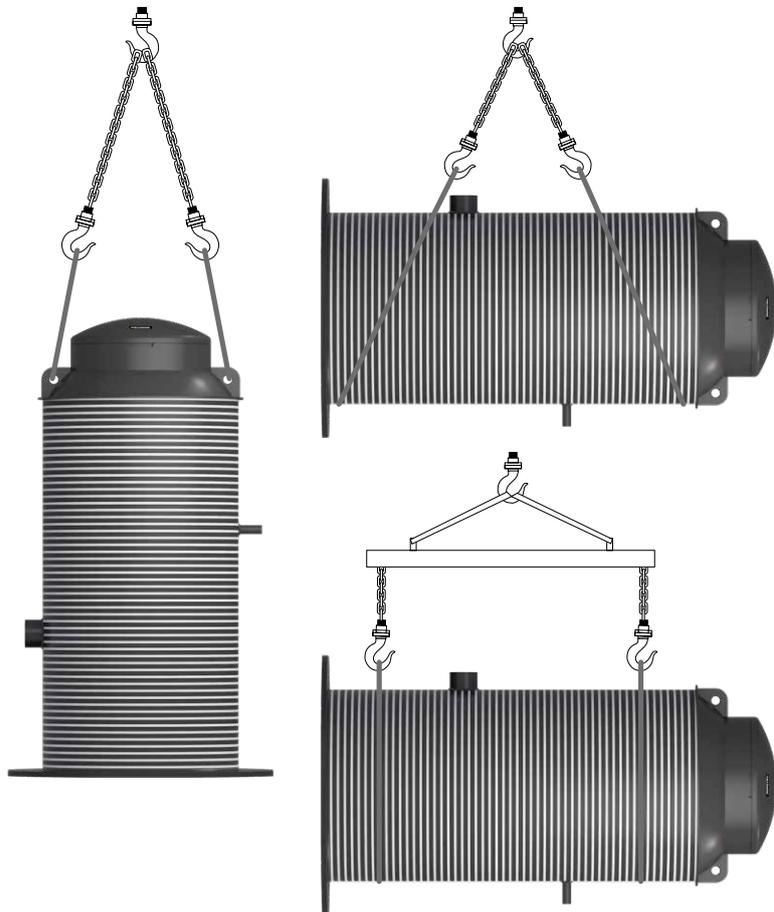
**Bolts, nuts, and washers** (A4)

**Lifting chains** (A4)

# INSTALLATION

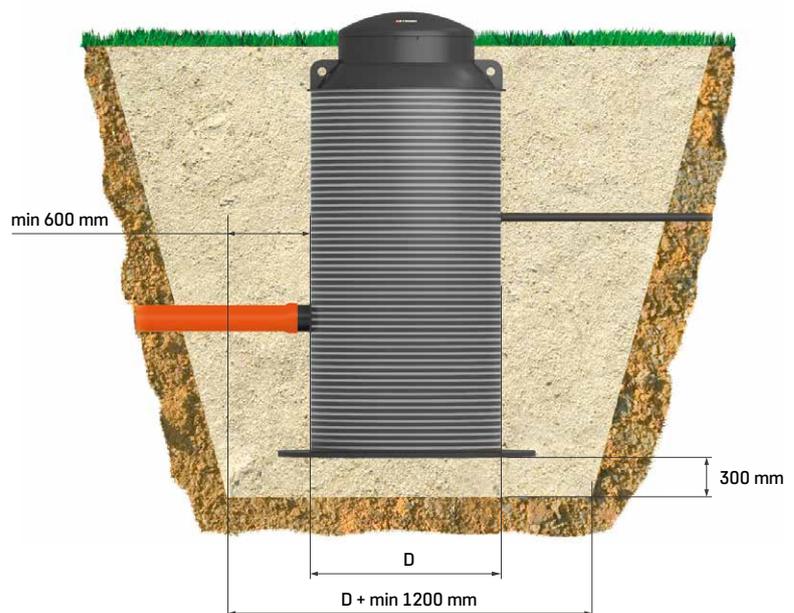
## LIFTING THE PUMPING STATION

Use lifting belts to lift the pumping station. Use lifting beams, if necessary. It is important to make sure that the lifting belts do not damage any protruding parts. Do not pull steel cables or chains around the pumping station. Use both lifting eyes when lifting the pumping station.



## INSTALLING THE PUMPING STATION

1. The trench for the pumping station needs to be with a diameter at least 1.2 meters wider than the diameter of the pumping station. This is to leave enough room for compacting the backfill around the pumping station.
2. The bottom of the trench is filled with a 300 mm layer of sand and then compacted.
3. Refer to the instructions given in chapter: "Anchoring" when anchoring the pumping station.
5. Lift the pumping station into the trench and ensure that it is not vertically tilted.
6. Then begin backfilling the trench according to the instructions given in chapter Backfilling.
7. When you've reached the inlet pipe height when backfilling, connect the pumping station with the sewer pipes and carefully compact around the pipes.



# INSTALLATION

## REQUIREMENTS FOR THE FILLING MATERIAL

Sand, gravel, and crushed stone are suitable filler materials. The filler must be clean, freely flowing, and must not contain ice, snow, clay, organic substances, or large or heavy objects that may damage the pumping station when falling onto it. The minimum required packing density is 1,500 kg/m<sup>3</sup>.

### Gravel

Gravel particle size must not be less than 3 mm or more than 20 mm.

### Crushed stone

Crushed stone particle size must not be less than 3 mm or more than 16 mm.

### Sand

Particle size must not exceed 3 mm.

## Sand and gravel mixtures

Sand and gravel mixtures may be used if the components comply with the above requirements for gravel, crushed stone, and sand. Sand and gravel mixtures must be compacted as instructed below.

## ANCHORING

### Surface water buoyancy

The pumping station must be anchored in order to neutralise the buoyancy of surface water and to ensure that the pumping station remains securely in place. Anchoring must be done in such a way that the weight of the pumping station and the soil resting on the protruding edges of the anchoring base plate are at least equal to the buoyancy. Calculated counterweight depends on the weight of the empty pumping station and the maximum level of the groundwater (the safest bet would be to guess that the max-

imum level of groundwater reaches the ground level). That way buoyancy is equal to the bulk of the pumping station. Small pumping stations have a protruding base plate wide enough that it does not need an additional anchoring plate. In order to ensure correct anchoring, correct backfill materials must be used and diligently compacted according to the instructions given in chapter: "Backfilling".



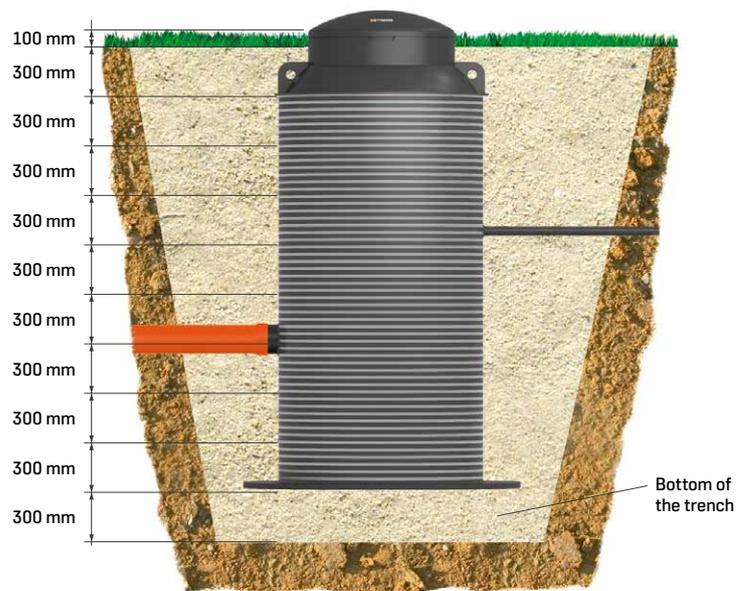
**The pumping station must not be installed on soil with a low load-bearing capacity. In such cases, the backfill layer must be separated with fibre cloth to keep it from mixing with soil.**

## BACKFILLING

The trench of the pumping station is filled on all sides by 300 mm thick layers of gravel, crushed stone or sand, compacting each layer to 95% of the soil's natural density.

In cases of high groundwater level or otherwise wet and heavy soil (e.g. clay soil), use only gravel or crushed stone as backfill material. Take special care when compacting near the pumping station's pipe connections to avoid leaving any gaps.

When installing the pumping station in a green area, make sure the cover is at least 100 mm above ground in order to prevent storm water from entering the pumping station.

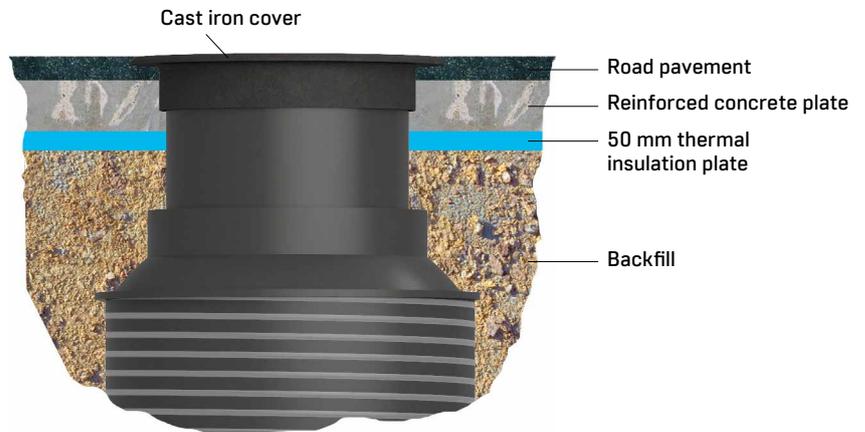


**Pumping stations may shift due to groundwater without full backfill. For this reason, the pumping station must be filled with water if backfilling works are interrupted!**

# INSTALLATION

## INSTALLATION UNDER TRAFFIC AREA

To avoid damages from traffic load on a pumping station installed under traffic area, the pumping station must be covered by a 150 mm thick reinforced concrete load balancing plate. The plate must extend at least 300 mm beyond the pumping station in all directions. All pumping stations under traffic areas must have a cast iron cover that is connected to the service opening with a telescopic tube. This prevents the traffic load from reaching the service opening of the pumping station.



# OPERATION

## STARTING THE PUMPS

1. Before starting the pumps, make sure the valves inside the pumping station and in the outlet pipes are open.
2. When setting the minimum and maximum levels for the pumping station, make sure that the pump will switch off at the water level set by the pump manufacturer. The minimum water levels are stated in the pump manual. The water level must never drop to a level that is lower than the impeller housing.
3. In case of three-phase motor pumps, check the rotation direction of the rotor before starting the pump! As a rule, the rotation direction is marked on the casing of the pump. If the pump rotates in the wrong direction, order the phase wires around. Be careful to avoid injury when checking the rotation!



**Pumps must never run dry. If that happens, stop their automation immediately!**

**It is prohibited to lift the pump by its power cable.**

**If the pumping station is not used in winter the pumping station and its internal piping must be drained of water to prevent it from freezing. To drain the internal piping, open the non-return valve covers and let the pressure pipes drain out.**

# MAINTENANCE

**We recommend doing the following maintenance at least once per year.**

1. Lift the pump together with the auto-coupling by the lifting chain, then wash the pumps with a pressure jet and assess their condition. Maintain the pumps according to the manufacturer's instructions (technical passport). If the pumps are working below their intended productivity or emit noises that were not there when the pumps were in order, we recommend trying to eliminate the faults in order to prevent the pumps from possibly becoming unusable in the future. Contact a company providing pump maintenance services.
2. Clean the inner walls and the bottom of the pumping station from sediments using a pressure jet. The cleaning interval may be shorter or longer depending on the sediments collecting in the pumping station.
3. Clean the inside of the non-return valves from the collected debris and sediments. To do so, close the ball valves and open the cover of the non-return valve.
4. Clean the float switches and the level sensor from sediments. Visually inspect the condition of the pumps' power cables.
5. After completing the maintenance works above, lower the pumps with the auto-couplings back down by the lifting chains and then check their functioning in operating conditions.

# SAFETY

1. The employer of the pumping station's maintenance personnel must instruct the maintenance employees about electrical hazards and toxic exhaust gases and must provide them with necessary protective equipment.
2. Switch off the pumps at the control cabinet before starting maintenance of the pumping station!
3. The pumping station must be ventilated for at least 5 minutes before entering the pumping station.
4. It is strictly prohibited to perform any works inside the pumping station alone!
5. Close all inlets to the pumping station for the duration of maintenance works!
6. Before commissioning the pumping station, properly qualified personnel must verify that all applicable safety regulations are fulfilled. The earthing, neutral line and the equipotential connections must comply with regulations for electrical installations and must be inspected by qualified personnel.
7. If the pump has a plug connection, its earthed power outlet must be installed above water level. The power cable of no-plug pumps must be connected by a qualified specialist.
8. No damage claims are accepted if safety requirements are ignored.

# ACCESSORIES

## ALARM DEVICE

As an accessory to small pumping stations, we offer a wireless alarm device such as TankCheck TC-412.

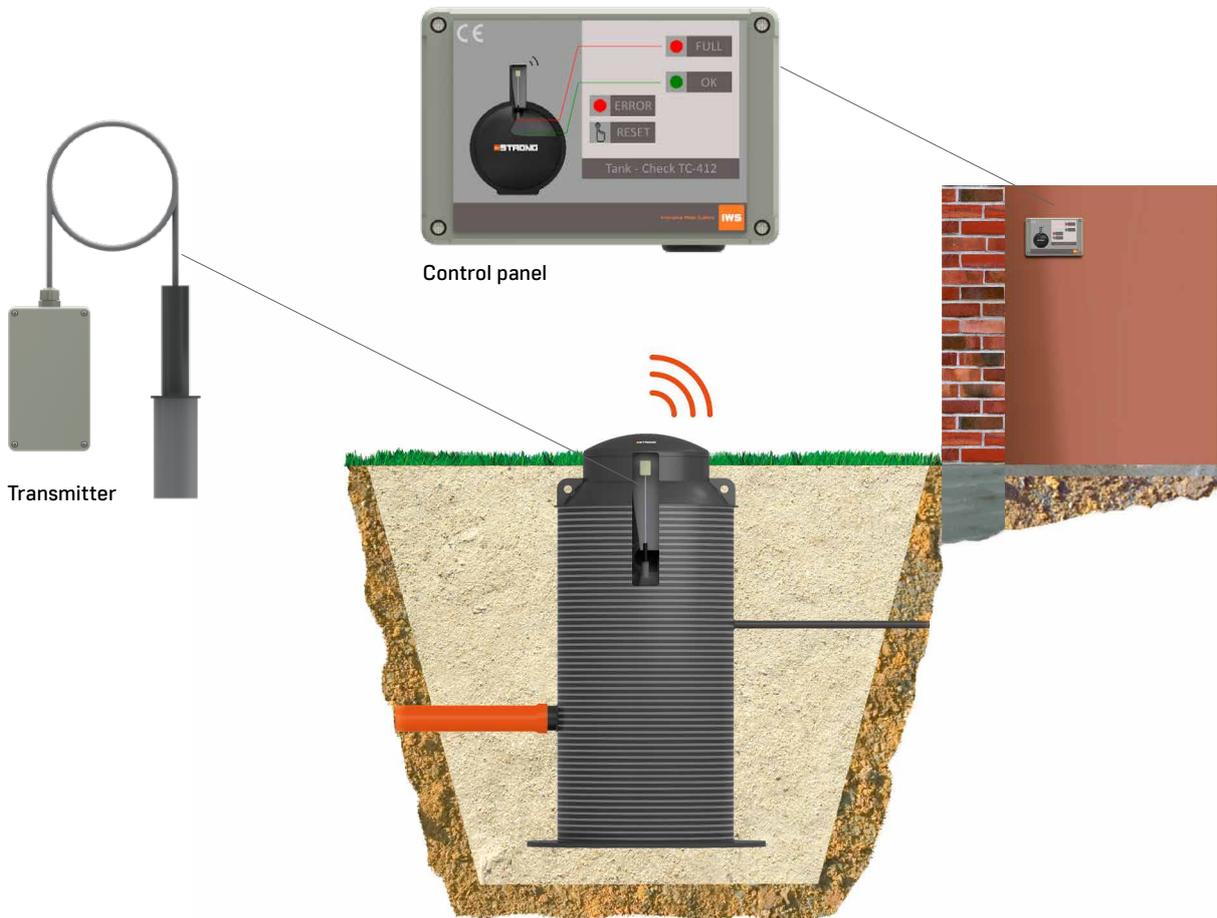
The wireless water level sensor Tank-Check TC412 has two parts:

1. a transmitter installed on the inner wall of the service opening with a sensor monitoring the water level in the pumping station;
2. a control panel installed at a suitable location in the building.

The level sensor is adjusted to a suitable height where it will check the level of the water in the pumping station and transmit the data to the control panel. On the control panel the green "OK" indicator lamp is on as long as the water level in the pumping station has not yet reached the set sensor level.

If the water level rises and reaches the level sensor, the tank full alarm will activate and the red "FULL" indicator lamp on the control panel will start flashing and the control panel will sound an alarm.

When emptying the pumping station, be sure to check the level sensor and, if necessary, remove from it any impurities that may affect its work.



# WARRANTY

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Innovative Water Systems assumes responsibility for the equipment's properties and for elimination of shortcomings that become apparent during the equipment's use. The warranty terms stem from the legislation of the Republic of Estonia, and the warranty is first and foremost based on the manufacturers' warranties as long as they do not conflict with the laws of the Republic of Estonia. The warranty includes shortcomings of manufacturing, materials or design of the equipment and its individual elements.

## 1. General warranty terms

- 1.1. The warranty is valid for 2 years i.e. 24 months provided that the product is used as intended.
- 1.2. The warranty period starts from the date of delivery of the product.

## 2. Validity terms of the warranty

- 2.1. The warranty is valid only if the regulations in force and the installation and operation manuals required to be followed upon installation, use and maintenance of the equipment are followed. The warranty will be valid if the equipment has been maintained regularly and used according to the instructions of the manufacturer.
- 2.2. If the identification of a fault requires that the equipment be dug out, this must be done in the presence of the representative of the manufacturer.
- 2.3. The warranty does not include damage caused to third parties because of a faulty product; it also does not include loss of revenue or any other similar loss.
- 2.4. In case of a fault becoming apparent, the equipment shall be repaired, not replaced as a whole.

## 3. The warranty does not include:

- 3.1. Training for installation, maintenance and use of the equipment.
- 3.2. Repairs of transport damage and other mechanical damage (caused by vandalism, lightning, fire, etc.).

The warranty does not cover shortcomings caused by insufficient maintenance, incorrect installation and repairs, or normal wear. The warranty is also void if the equipment has been modified.

